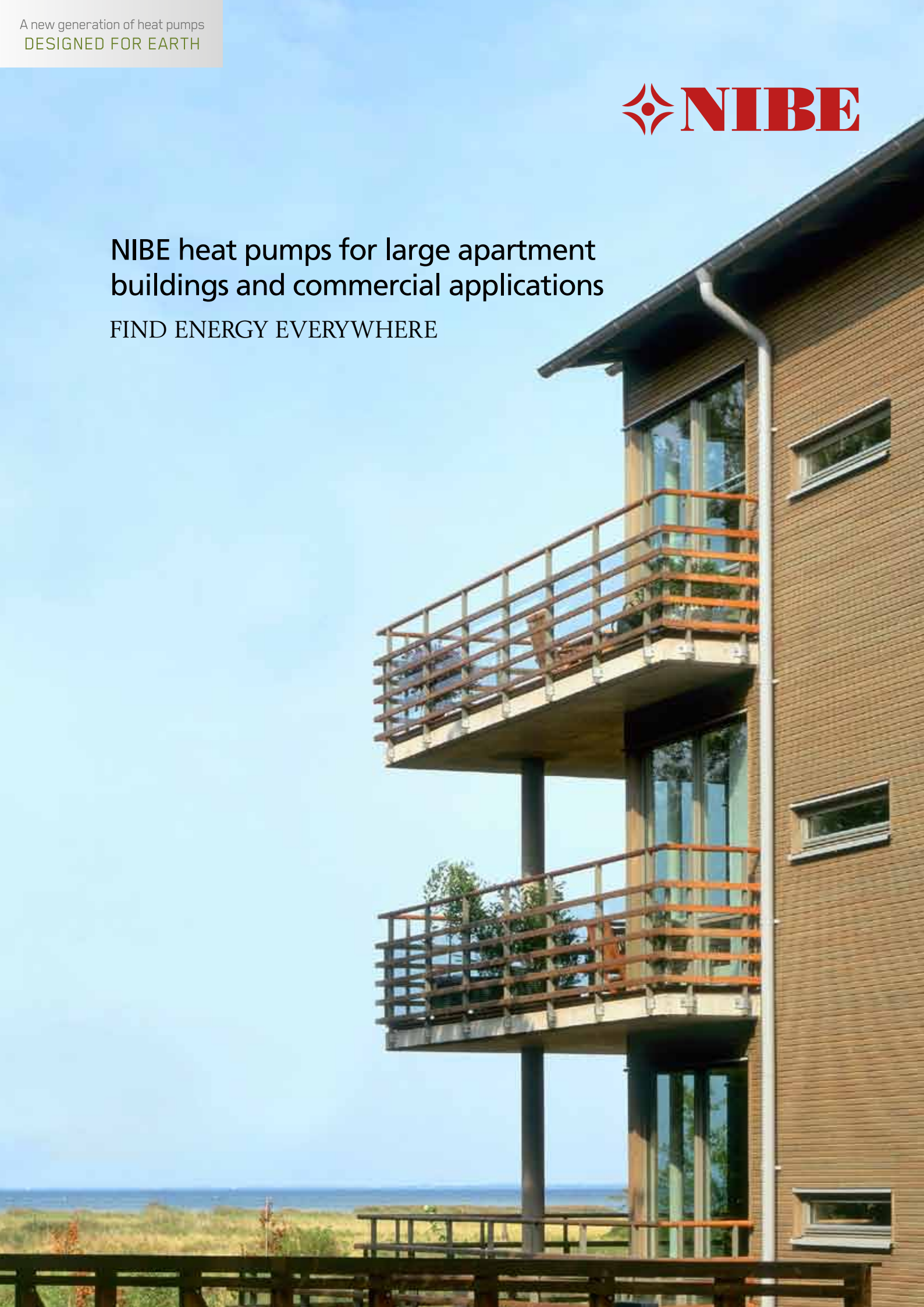
A new generation of heat pumps
DESIGNED FOR EARTH

NIBE

NIBE heat pumps for large apartment buildings and commercial applications

FIND ENERGY EVERYWHERE





ENERGY OUT OF THIN AIR? IT'S NOT MAGIC. IT'S NIBE.

Look out of your window and you see streets. Or trees. Or maybe open fields. At NIBE we see free sources of energy – from the air around you and the ground beneath your feet.

Fresh air is free. And with a NIBE air/water heat pump you can use it to heat your home. Even at sub-zero temperatures, ambient air contains energy. And when you concentrate that energy using a NIBE heat pump you can heat up your home's water-based radiators – or underfloor heating, and domestic hot water.

Our smart technology uses energy from the ground too. A NIBE ground source heat pump collects solar energy stored in the ground to heat your building. Energy builds up underground from the first days of spring when the surface of the earth starts to thaw, to high summer, when the rays of the midday sun penetrate deep down. By the time autumn leaves fall, there's enough energy stored in the ground to heat up your building throughout the coldest winter.

You can even use our ground source heat pumps for cooling applications through out the year.

Using the energy from outside air, or the ground beneath your feet might sound like magic. But for us it's natural. Our pumps have been heating homes in Sweden using natural elements for over 30 years.

IF WE CAN SAVE BIG BUCKS ON SMALL HOUSES, IMAGINE WHAT WE CAN DO WITH LARGE APARTMENT BUILDINGS!



Heat pumps have been without doubt the Swedish householder's greatest money-saver in recent years. More and more property owners now realize that heat pumps can deliver major savings and are therefore a smart solution - in both financial and environmental terms. What's more, you don't have to commit to a particular supplier.

NIBE now offers installations up to 540 kW that are capable of covering most needs – even buildings with high energy consumption. Since there is no need for cisterns or fuel storage, you can spread several installations around larger buildings. We're not talking about saving small change here. A heat pump can make a much bigger difference than that. So why burn money when you could be saving it, irrespective of the current interest rate or state of the economy?

Climate-smart

Another important reason to choose a NIBE heat pump is that it's so environmentally friendly. Since the heat pump work by converting stored energy into central heating and warm water, emissions are naturally much lower than those of a traditional fuel-based heating system.

In some countries, subsidies are now granted to homeowners for changing from fossil fuel-based heating systems to more modern, renewable energy sources. Since ground source and air/water heat pumps are officially recognized as a climate-smart option, they are fast becoming the obvious choice.



Efficient, safe and problem-free heating and hot water at a fraction of the alternative cost and a fraction of the environmental impact.

Freedom of choice

Switching to a heat pump is a great way to control your costs and reduce environmental impact. A heat pump lets you keep your options open. It lets you choose the right type of heating that's best for your property. One that saves you money, and ultimately saves on the natural resources future generations will so badly need.

Less hassle

Another advantage of heat pumps is that they barely require any work. There's no fuel to order. No maintenance, no chimney sweeping. Nothing. Just an electricity metre which you might want to smile at from time to time.

What's special about apartment buildings?

To install a heat pump in a private home is one thing. To install one in an apartment building is quite another. There are many variables to take into account. We are here to help you choose the right solution and the right sized installation. We've had years of experience in providing heating solutions to suit every kind of building - from churches to the ice hotel; from factories to pig farms; from schools to apartment buildings. We know where problems can arise and how to avoid them. We know what the common pitfalls are. What's more, we know how to plan an installation that will give you peace of mind. Visit www.nibe.eu to find out more.

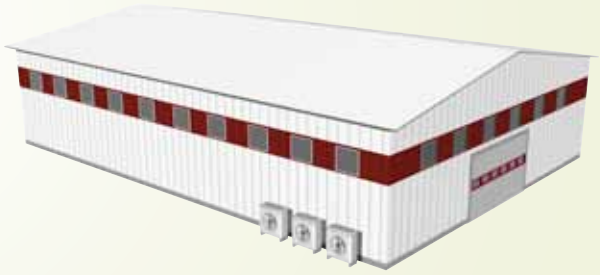
THERE'S ENERGY EVERYWHERE. WE JUST HELP YOU TO TAP INTO IT.

Heat pumps can extract energy from a variety of different sources. The one you choose will depend on conditions at the site of your building. With an air/water heat pump, energy is extracted from the outside air and concentrated in order to provide heat to warm up the building's water-based radiators, underfloor heating and showers or bath water.

With a ground source heat pump, energy can be collected from several different sources: rock, surface soil, ground water and lake. The most suitable one in each case is determined by factors such as the building's energy needs, its current heating system and the kind of terrain the building is situated on.

Air/Water heat pump
Takes energy from the outdoor air.

- Simple installation
- No impact on your garden



An air/water heat pump extracts the energy found in the outdoor air. This is achieved by allowing the outdoor air to pass across an air coil in the outdoor unit where energy is transferred to the heat pump's low temperature side. The output decreases as the outdoor temperature drops, which means you need another form of heating during really cold weather.

Rock - using a ground probe
Ideal for refurbishment or adaptation from a fossil fuel based heating system.

- Irrespective of the climate zone
- Space-saving compared to other ground-source heating alternatives
- Excellent output even on the coldest days
- Great reliability, minimal maintenance
- Efficient free cooling performance



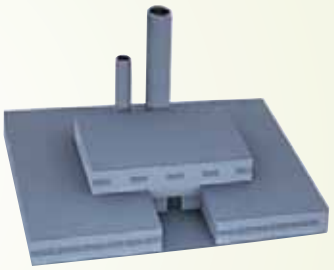


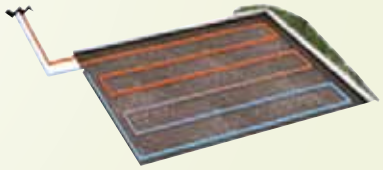
A heat source with an almost constant temperature lies in the lower subsoil of the so-called "near-surface geothermal layer". It can be used all year round. The heat pump collects stored solar energy from a collector in a hole drilled into the rock. The depth of the hole can vary between 90 – 200 metres, depending on the size of heat pump selected and on local building regulations. This type of system can be used for all possible building types, large or small, public or private. It requires little space and the ground probe can be drilled in the smallest of gardens.

Surface soil - using a surface collector

Cost-effective energy collection.

- Irrespective of the climate zone
- Excellent output even on the coldest days
- Great reliability, minimal maintenance
- Free-cooling option



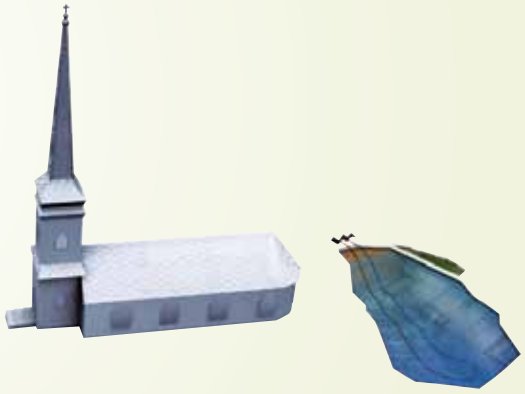


During the summer, solar heat is stored in the soil. This is either directly absorbed as insulation or as heat from rain and the air from the near-surface layer of the soil. The heat pump collects this stored solar energy from a buried collector, each hose filled with anti-freeze,and buried at a depth of about 80 – 100 cm. The length of the hose varies between 250 and 400 metres, depending on the size of heat pump selected. Using this energy for heating is a cost effective method. The highest yield can be obtained from soil with a high water content.

Lake collector

Cost-effective installation for lakeside buildings.

- Irrespective of the climate zone
- Excellent output even on the coldest days
- Great reliability, minimal maintenance
- Free-cooling option



If your home is built beside a water source such as a lake, heat from the lake water can be extracted using a surface soil collector anchored to the bottom of the lake.

Ground water

A viable energy source for any building where ground water is easily accessible.

- Irrespective of the climate zone
- Excellent output even on the coldest days
- Great reliability, minimal maintenance
- Free-cooling option
- High seasonal COP

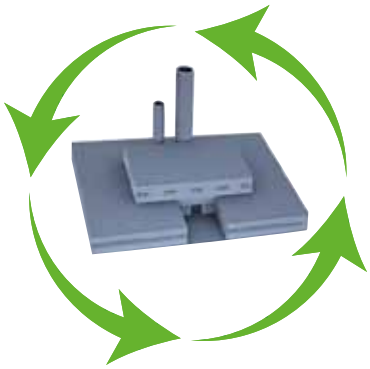


Ground water can also be utilised as a heat source since it has a temperature of between 4 and 12°C all-year round. The heat pump collects solar energy stored in the ground water. Normally, there is one well for drawing up water and one for returning it.

PROCESS HEAT

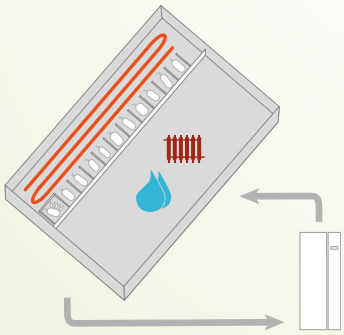
Lots of companies produce heat as a byproduct of their daily operations and do not use it. They just throw it away. Examples are hydraulic presses, heavy machines, dryers, fertilizer, cooking, and storing goods in facilities with at temperatures that are too high.

Many of these process heat sources can be used by a heat pump with excellent results. The warmer the source, the better the savings it delivers. Use your imagination!



Manure Heat

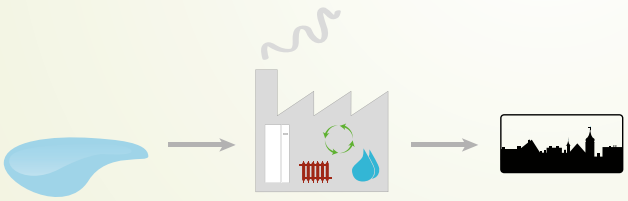
A lot of heat is used in pig farming. For this reason, more and more farmers are starting to recycle the heat from their pig manure. They bury heat collecting pipes in the manure in order to take advantage of the heat from the hot slurry and run it through heat pumps. Some farms have already achieved major savings by this method in just a few years.





Water Heating

A water treatment plant heats its facilities and domestic hot water using the tap water that it treats as an energy source. The incoming water is transported through a separate loop, equipped with heat exhanger, reducing the risk of leakages.

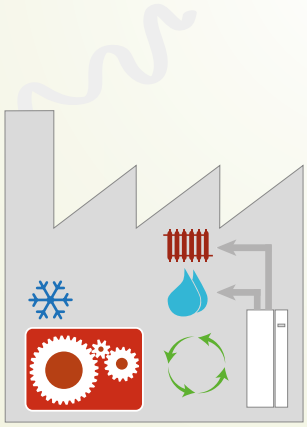




** if you need a special system solution, contact your installer.*

Hydraulic heat

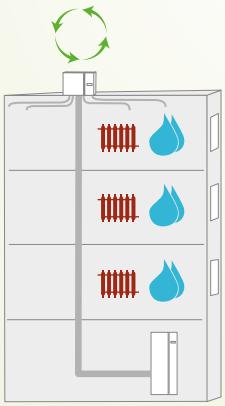
Waste heat is recycled from hydraulic presses, cooling the oil to keep it at a stable temperature. In a satisfyingly neat cycle the energy recovered produces enough heat to wash and dry the pressed part as well as domestic water to wash and dry the pressed parts.





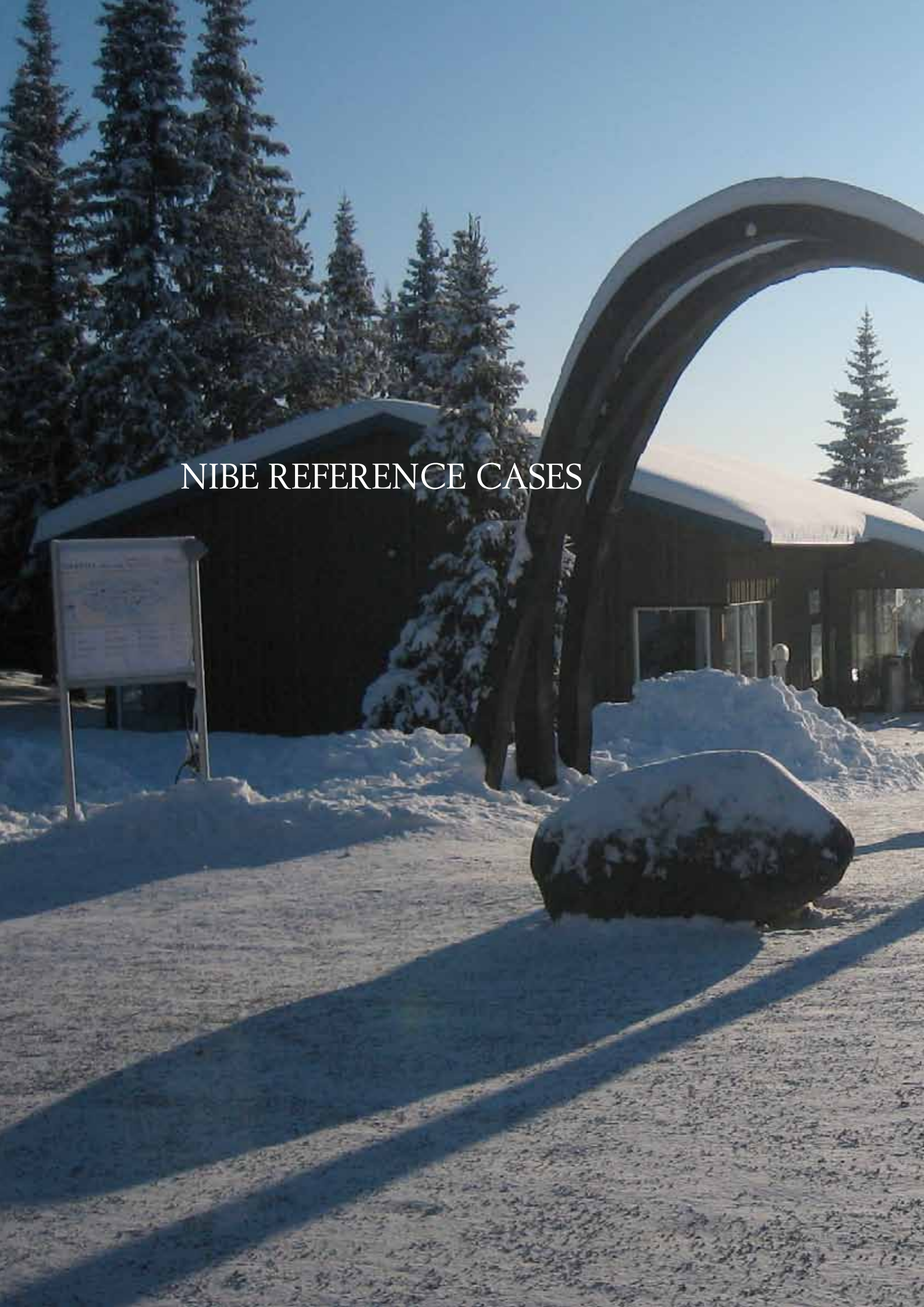
Ventilation heat recycling

Exhaust air heat pumps have long been common in private homes. In larger buildings, it is also possible to take advantage of this heat source - which would otherwise be lost along with the ventilated air. This is one of the most profitable energy savings for larger apartment buildings.





** if you need a special system solution, contact your installer.*

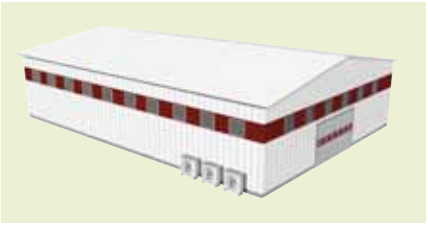


NIBE REFERENCE CASES



REFERENCE CASE 1

A SMALL INVESTMENT LED TO MAJOR SAVINGS





The background

Norskens Wood in Ljungby is a traditional building supplies store. It also makes windows, specialising in circular and half moon shaped frames. In 2009, the company moved south of Ljungby, Sweden into brand new premises. These included a retail store, office and staff areas of approximately 600 square meters on two levels. Norskens Wood turned to the local plumber "Ohlssons Rör" to install a new heating system, explaining that they wanted a solution that demanded a minimum amount of effort.

Solution

In spite of the large area that needed heating, costs were moderate. This made it hard to evaluate the benefits of a drilling or digging solution. The local plumber "Ohlssons Rör" therefore selected a NIBE air/water heat pump. Air/water heat pumps are slightly less efficient than ground source heat pumps, but since no drilling is necessary, the installation costs are considerably lower. As a guideline, the model you choose will depend on how much heat you need on a "normal day" and how many days a year you need the system to work at full effect.

In Norskens Wood´s case the best solution turned out to be three NIBE F2025 14 kW air/water heat pumps. They are supported by a 42 kW electric boiler EP42. All the rooms at Norskens Wood´s premises are heated by an under floor heating system, including the upper floor.

Results

"We've tested the whole system during the coldest winter days without any problem," says Sven-Olof Sjöholm at Norsken. According to NIBE's Fredrik Snygg, "More and more people are realising that air/water heat pumps are a good option for larger premises.

Using a NIBE SMO 10 control unit, you can easily link 9 heat pumps up together in the same system. Providing up to 180 kW (F2300-20) heat, this adequately covers the needs of the majority of buildings in southern Sweden."

FACTS

Installer:	Ohlssons Rör
Facility:	Construction Retail store Ljungby
District:	South of Sweden
Dimensioning local outdoor temperature	-23°C
Heated area:	600 m^2
Heat pumps:	3 x NIBE F2025 (14 kW)
Electric Boiler:	EP 42 (42 kW)

REFERENCE CASE 2

SWEDISH APARTMENT BLOCK SLASHES ENERGY USE BY 65%





The background

The owners of a large (1,200 sq. m.) 1905s building in Laholm, South Sweden rented six apartments to private people and space to a hairdressing salon as well as a café. The salon and café consumed a lot of hot water every day. The owners were looking for an environmentally friendly heating system that would increase profits without them having to increase rents. The price of gas, high ceilings and poor insulation were pushing up energy bills year-on-year – especially in recent very cold winters with temperatures well below minus.

Solution

The owners agreed on a gas hybrid heat pump solution that would be installed in two stages. In year 1, the owners added a NIBE F2025-14 kW air-water pump, VPA300/200 water heater and NIBE SMO 10 basic controller to their heating system. After two years the owners were so pleased with the savings they achieved that they added one more NIBE F2300 20 kW air-water heat pump.

Results

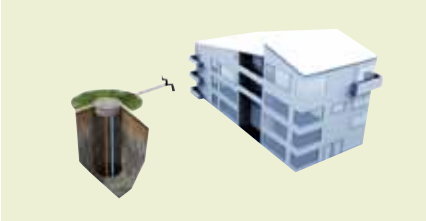
In the first year, energy use was reduced by 35%. After the second installation, energy use was cut by 65%. The complete system comfortably heats a larger property of this size, supplying water at a constant temperature of 65°C. What residents particularly liked was the low noise of the heat pumps, and the significant reduction on environmental impact the system made. This case shows that even though the heat pump covers only a small part of the buildings power demand on the coldest day, the energy savings over the year will be significant.

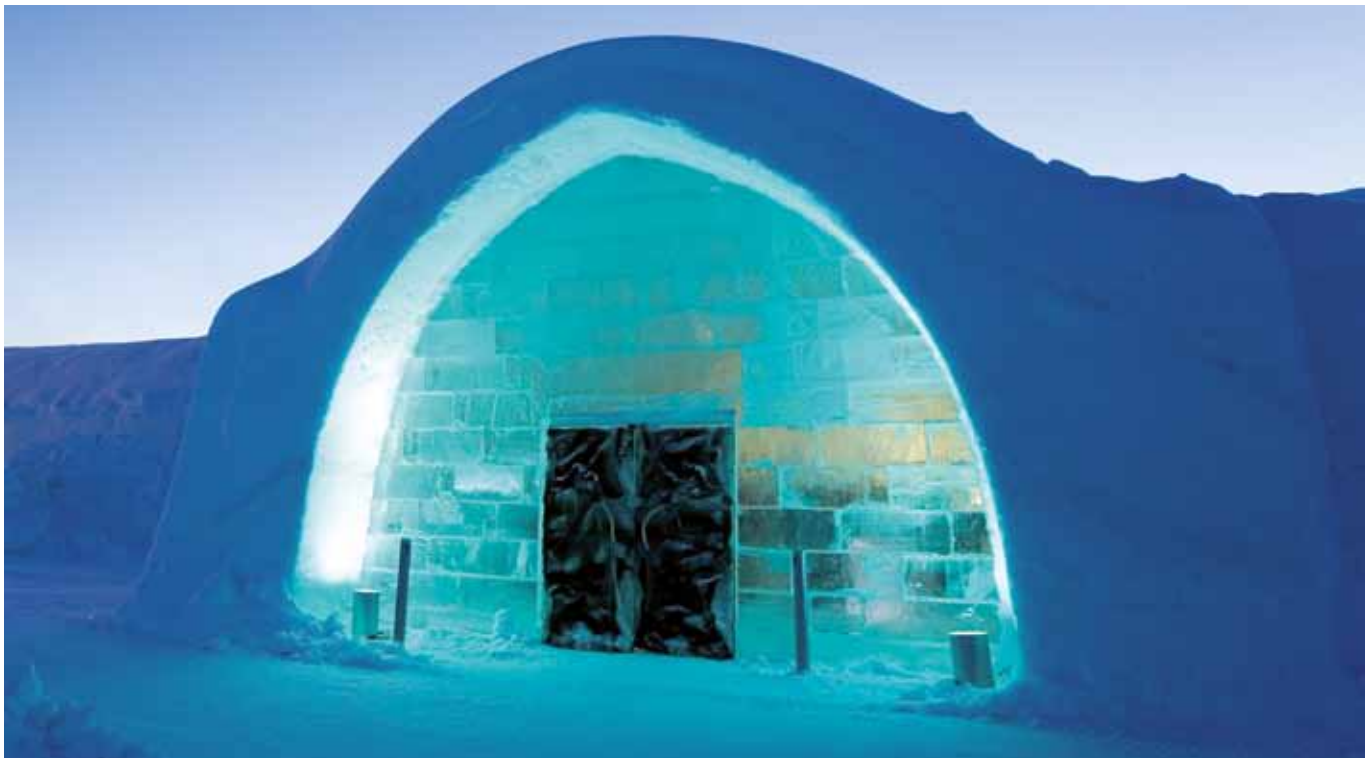
FACTS

Facililty:	1905s apartment building
District:	Laholm, South Sweden
Dimensioning local outdoor temperature	-19°C
Heated area:	Around 1,200 Square metres
Heat pumps: Year 1	1 x NIBE F2025 air-water heat pump 14 kW.
Year 2	1 x NIBE F2300 air-water heat pump 20 kW
Control unit:	NIBE SMO 10
Water heater:	VPA300/200, PUB-210

REFERENCE CASE 3

HEAT PUMPS MAKE THE ICE HOTEL HOT AND THE WORLD COLD.





The background

When you make your living out of the cold - which is the case for northern Sweden's Ice Hotel –thinking about climate issues is unavoidable. The Ice Hotel is a powerful symbol of mankind's struggle against global warming. Its owners recently launched the concept of CO_2 Negative, which is about alleviating climate change. Not content with becoming CO_2 neutral, the Ice Hotel is determined to go one step further and actually absorb more CO_2 than it emits.

Climate-smart heating plays a major role in the CO_2 Negative initiative. In addition to its well-known hotel, the complex includes some 30 buildings which are kept at a normal room temperature. More and more of these are being heating by ground source heat pumps.

A bonus for the Ice Hotel is that the geothermal heat extraction process actually cools the ground, thus creating an environment where snow and ice will remain longer.

Solution

The first ground source heat pump was installed at the Ice Hotel in 2000. Today the hotel has 14 NIBE heat pumps, ranging from 7 kW to 40 kW. The latest was installed in the winter of 2009.

Overall, the hotel heats an area of almost 5,000 square meters using heat pumps. Some were installed in new buildings, while others were used to replace existing installations.

Results

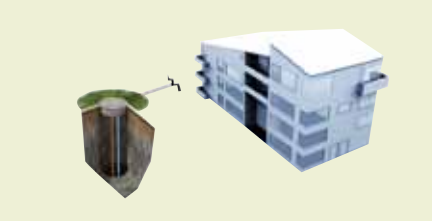
Exact savings are hard to calculate since the installation has been installed gradually. However, there is no doubt that hundreds of tons of CO_2 and millions of SEK have been saved as result.

FACTS

Faility:	The Ice Hotel
District:	Jukkasjärvi, Northern Sweden
Dimensioning local outdoor temperature	-30°C
Heated area:	About 5 000 squere meters (Reception, inns, cottages, laundry room, staff facilities, etc.)
Heat pumps:	NIBE FIGHTER 1110 (15 kW), 2 FIGHTER 1110 (7 kW), 2 FIGHTER 1115 (13 kW), FIGHTER 1135 (12 kW), 2 FIGHTER 1135 (15 kW), FIGHTER 1210 (7 kW), FIGHTER 1235 (10 kW), FIGHTER 1310 (20 kW), FIGHTER 1330 (22 kW) and FIGHTER 1330 (40 kW)

REFERENCE CASE 4

SPANISH VINEYARD COOLS AND HEATS WITH SWEDISH GROUND SOURCE HEATING SYSTEM









The background

One of the most important aspects of wine production is to maintain the correct temperature. It has to be right where the wine is growing, and during fermentation and storage.

In 2001, Raül Bobet set off on a journey through the Pyrenees in search of a suitable location for a new vineyard. Bearing climate change very much in mind, he was looking for a site that would be affected as little as possible by this. Castel d'Encus proved to be just perfect. In this mountainous area of Pallars Jussà in the Pyrenees, at an altitude of about 1000 metres, monks had been making wine since the 12th century. The ancient fermenting vats, carved out of the rocks by the monks, were still there in good condition. Even in those days, the temperature-retaining properties of the bedrock allowed the fermentation process to be controlled.

Solution

NIBE's ground source heat pumps at Castel d'Encus provide heating and cooling that meet all the temperature control needs of this new Spanish wineyard.

Castel d'Encus will be showing the greatest possible consideration to the environment as it begins its production of wine. The winery uses no pesticides or herbicides and all the wine that it sells is produced solely on the estate. What is truly innovative, however, is the winery's use of an ancient method in a new way.

The monks used geothermal energy for temperature control, and now state-of-the-art technology from Swedish NIBE is being applied for the same purpose. It is of utmost importance to maintain the exact temperature throughout the fermentation process. And what that temperature is depends on several factors, such as the variety of grapes being used. The wineyard is using a system of five NIBE FIGHTER 1320 pumps, each rated at 40 kW. This system provides a total output of 200 kW. It uses a so-called 4-pipe system, which is unique in that it both cools and heats at the same time and that just the one system meets both these needs using the minimum amount of energy. The system has four pipes - two for heated water and two for cooled water. The heat energy and cooling are both extracted from boreholes in the bedrock. The heat pump and the two water systems are controlled by a Building Management System to obtain exactly the right temperature.

Results

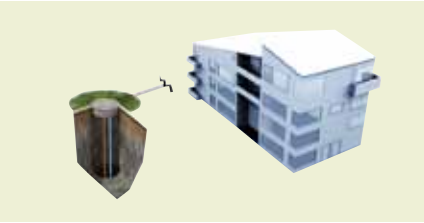
Castel d'Encus also benefits from another technological innovation that makes it possible to operate two wine vats in parallel. Should one of the vats require cooling and the other heating, the surplus energy from one can be used to heat the other. But if more heat is needed, it can be taken from the bedrock. When more cooling is required, the surplus heat is pumped down into the bedrock. The system is expected to have an energy coefficient of performance (COP) of at least 4, but sometimes as much as 5. It is estimated that the system will save Castel d'Encus about 50-60% of the energy it would otherwise have used. All thanks to what is basically the same method used all those centuries ago by the monks.

FACTS

Facility:	Wineyard Castel d'Encus
District:	The Pyrenees, Spain
Heat pumps:	5 x NIBE Fighter 1320-40 (200 kW)
Solution::	NIBE 4-pipe systeme, active and passive cooling
Savings:	Approx. 50-60% of the energy consumption

REFERENCE CASE 5

LARGEST GROUND SOURCE HEATING PROJECT EVER!





The background

Ljuskärrsberget is one of the largest ever ground source heating projects to be conducted in Sweden and Europe. The 500 apartments covered by the project belong to the Ljuskärrsberget tenant-owners' housing association in Saltsjöbaden outside of Stockholm. It is estimated that the new system will save the association an annual total of 3.5 million kWh. That is equivalent to 350 tonnes of CO_2.

The association is very large, comprising some 500 apartments divided into 13 groups of buildings. All in all, that means 52 buildings to manage and maintain! What really makes this project unusual is that the contracting company, Enstar AB, is installing more than just heat pumps. It is also converting all the apartments from direct electric heating to a distributed water heating system.

Chair of Ljuskärrsberget Association, Mathias Skoglund, explains, "In the past five years, our energy costs have increased by 100% to about SEK 10 million a year".

"We were forced to take action. We were quite powerless to change the situation in any way. But now we'll have a system that not only saves money and benefits the environment, it will also increase the value of all our members' apartments."

Solution

This project is enormous in all respects. It's no easy job installing distributed water heating systems in 52 buildings and 500 apartments. Not to mention the work of installing a ground source heating system. It involves drilling no less than 156 boreholes to a depth of approximately 230 metres each. The heat from the boreholes is piped to 13 boiler rooms, each equipped with two NIBE F1330 ground source heat pumps and two VPB750 water heaters. That's a total of 26 water heaters and 26 ground source heat pumps each with a capacity of between 40 and 60 kW.

Results

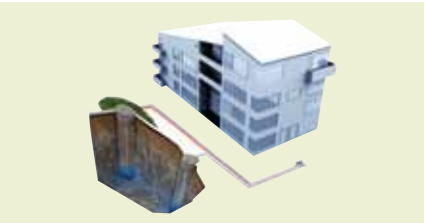
Once everything has been completed, it is estimated that some 3.5 million kWh can be extracted annually from the bedrock - for free. The project is expected to deliver an annual cost saving of almost SEK 5 million. The saving will be even greater if the cost of electricity continues to rise.

FACTS

Facility:	Association Ljuskärrsberget
District:	Saltsjöbaden Stockholm, Sweden
Heat pumps:	26 x NIBE F1330 40-60kW
Water Heaters:	26 x NIBE VPB 750
Savings:	Approx 5 million SEK / year

REFERENCE CASE 6

HOTEL STÁCIÓ SAVE MONEY USING RENEWABLE ENERGY FOR HEATING





The background

Hotel Stáció opened in august 2006. It is the first four star hotel in the vicinity of Liszt Ferenc International airport in Budapest. Hotel Stació offers its guests a quiet environment with mediterranean terraces, a nice garden and a lake. Hotel Stáció is an oasis, surrounded by family homes and the forest area of Vecsés. In 2011 an extension was built on the hotel, which now offers 75 comfortable rooms including 5 exclusive apartments, a 1.000 m2 wellness area (9x19m pool, jacuzzi), bathing facilites, and 6 conference rooms. The owners wanted to use renewable energy sources for heating and cooling

Solution

Hotel Stació has a large demand for heating and cooling, domestic hot water and pool heating. Conferences and other business events increase cooling needs in the summer, as does the demand for hot water for the pool. In winter there is a demand for heating rooms and other facilities, while the conference room can need cooling. The building is well insulated, occasionally making the south-facing areas too hot, while the north-facing rooms could be cold during autumn and spring.
The owners overcame these challenges by installing a NIBE ground-source heatpump solution. 3x F1330-60kW units are installed in the hotel and use groundwater wells as a heat source. The NIBE system produces heating and cooling power while supplying domestic hot water and pool heating.

Results

"The temperature of each room and common areas can be controlled independently, heating some and cooling others at the same time. For us it means great comfort with minimal energy consumption, thanks to the flexible NIBE system", Says the hotel owner.

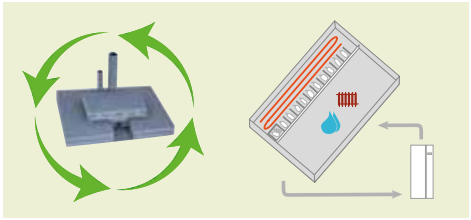
Tamás Szép from NIBE's distributor, Penta-Klíma says, "This solution demonstrates that heat pump technology is an easy way to manage such a complex task. Efficiency is much higher than a simple heat pump installation. Even in the worst case scenario the COP remains as high as 4.17 with each HP delivering 71kW of heat power, 54kW of cooling power and with a consumption of 17kW of electrical power. However, in summer peak COP can reach 7.0. This considerably reduces the owner's heating bills while evening out the flow of heating and cooling duties throughout the complex.

FACTS

Installer:	Penta-Klíma Ltd
Facility:	Natural House Ltd.
Heated area:	5700m^2
Heat source:	12 pieces, 20m deep groundwater wells
Heatpumps:	3 x F1330-60 (200kW heating power)
Domestic hot water:	3000 liter

REFERENCE CASE 7

TAKING ADVANTAGE OF SURPLUS ENERGY





The background

Gårsta just outside Hammenhög in Österlen is a major pig breeding farm. 24,000 pigs are born every year in the new facility, an operation that is normally very energy-consuming."Piglets need to be kept warm", says owner Johan Nilsson. Traditionally they have a bed of straw and a heat lamp, but this is a very inefficient solution. Therefore, underfloor heating was introduced a few years ago. "The alternative for most people is to burn straw", says Johan Nilsson."But this requires a special building to be built, and also requires a lot of man and machine hours to take care of it all. In addition, it can run out, something that is not always noticed until it's too late.

Solution

When Gårstad's large facility was built, they chose to invest in ground source heating - but without the ground! Instead of boring holes or digging ditches, they chose to put the collector hose in the castings under the slurry gutters. 8,000 metres in total."Pig slurry has a temperature of about 37 degrees when it is fresh," says Lars-Erik Bengtsson at the local plumber, Bengtsson Smide & VVS, who planned and carried out the installation."It heats the surrounding concrete to about 15 degrees, which is extremely efficient because the system only needs to be a temperature of around 40 degrees." The heat extracted from the gutters does not affect the quality of the slurry. The slightly lowered temperature causes the evaporation of ammonia and other gases to decrease slightly.The hoses are located in 16 different parts of the building that house 50 sows each, and are gathered in a huge coil for three NIBE FIGHTER 1310s, each of 30 kW output.

Results

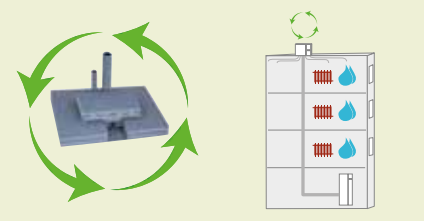
"The pumps have run for about 140,000 hours combined," says Lars-Erik, "and during that time have consumed 570,000 kWh. But at the same time they have delivered nearly 3.3 million kWh of heat. That's a heating factor of 5.5!"More than 2.5 gigawatt hours have been extracted from the slurry. Over 4.5 years! If one calculates at an average electricity price of 0.80 SEK per unit, it means a saving of nearly 2 million SEK."This kind of installation costs about 600,000 SEK, so the entire investment is largely paid for after a year and a half!"

FACTS

Installer:	Bengtsson Smide & VVS
Construction:	Piglet farming - Gårsta, East Ingelstad
District:	South of Sweden
Heated area:	600 m^2
Heat pumps:	3 x NIBE FIGHTER 1310
Collector:	8000 metre hose embedded in the slurry gutters
Savings:	Approx 440.000 SEK / year

REFERENCE CASE 8

GROUND SOURCE HEAT PUMPS WITHOUT BEDROCK REDUCE DISTRICT HEATING COSTS





The background

The association "Stockholmshem" owns about 26,000 apartments making it the second largest housing company in Sweden. With hundreds of properties across Stockholm, it also finds itself with exorbitant heating costs to the tune of about SEK 260 million a year! The company is now determined to cut these costs and has decided to invest in ground source heat pumps - without bedrock.
It has about 350 heating systems and an annual heating bill of approximately SEK 260 million.
Gunnar Wiberg of Stockholmshem explains, "The heating systems in our various properties run on district heating, pellets and bio-oil. And we're talking about huge amounts of energy. Some of our systems are larger than the district heating systems in a small Swedish town. District heating covers a substantial share of the heating demand for Stockholmshem's properties. The company has now decided to invest in heat pumps as a complementary heat source and thus achieve substantial energy savings."

Solution

District heating covers a substantial share of the heating demand for Stockholmshem's properties. Stockholmshem has determined on a solution that is becoming increasingly popular among large property owners - that of combining exhaust air with a ground source heat pump - but without bedrock. "We are currently in the process of installing no less than 140 heat pumps in line with this method. Instead of placing pipes in a borehole or a coil in the ground, we will be using a heat exchanger to extract the heat from the exhaust air.", says Gunnar.
The equipment being installed is not exhaust air heat pumps, but NIBE's largest unit, the NIBE F1330, which is normally used for bedrock or ground source heating.

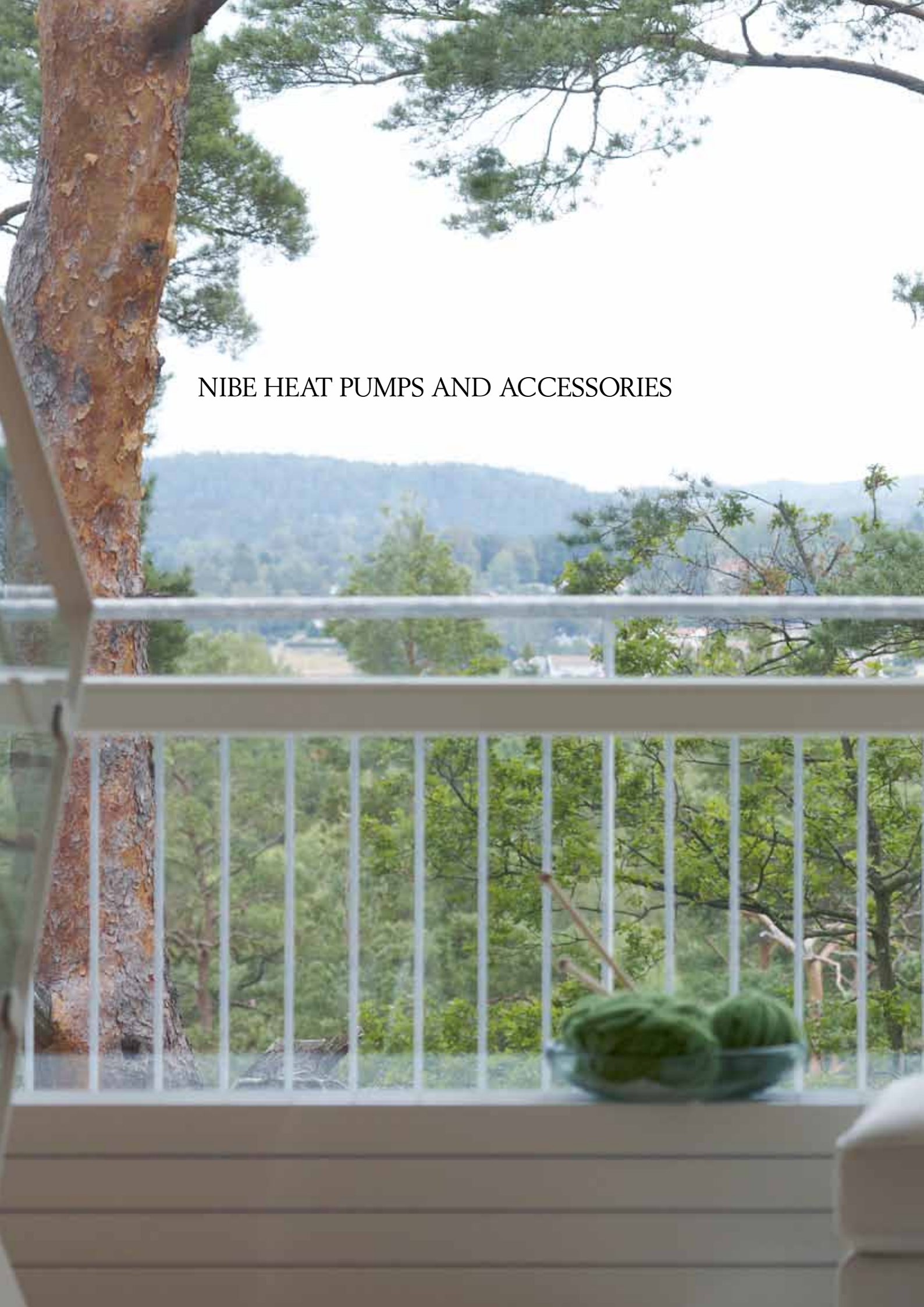
The exhaust air is conducted via the normal ventilation system to a heat exchanger coil. The heat transfer fluid passes through this coil to the heat pump. The temperature of the heat transfer fluid becomes higher than in a bedrock/ground source heating system which subsequently results in an even higher coefficient of performance (COP).

Results

Gunnar Wiberg of Stockholmshem explains "The performance of the systems that we've been running for a while has surpassed even our most optimistic projections. There is much more energy in the air than we had originally supposed. In some cases, we estimated that we would be extracting up to 120 kW but in fact the figure has been almost as high as 160 kW!
We are using our NIBE F1330s as supplementary systems and this has proved to be a very economical solution. Our district heating bills have fallen by as much as 40% and our annual energy consumption is down by about 70 kWh per square metre.
This means that the new system will have paid for itself within 3 or 4 years perhaps."

FACTS

Facility:	Association Stockholmshem
District:	Stockholm, Sweden
Heat pumps:	140 x NIBE F1330
Savings:	The district heating bills have fallen by as much as 40% and annual energy consumption is down by about 70 kWh per square metre/year.



NIBE HEAT PUMPS AND ACCESSORIES



WHAT MAKES NIBE'S GROUND SOURCE HEAT PUMPS SO EFFICIENT AND USER-FRIENDLY?

Some of the most important features of our new heat pump, the NIBE F1345 ground source heat pump, are presented below. Thanks to a combination of state-of-the-art technology and various energy-efficiency enhancing features, the NIBE F1345 delivers unsurpassed annual energy savings and enables you to maintain a comfortable indoor climate all year round, whatever the weather.

And you don't need to be a technical wizard to make it work. A large, clear, multicolour display makes it possible for everyone to exploit the energy-saving potential of this exciting green technology.

Internally fitted low circulation pumps. In 40 kW and 60 kW external brine circulation pump supplied.

Less than 3 kg of refrigerant per installation unit. This means that no inspection is required.

Separate enclosures for the compressors and refrigerant parts give more reliable service and lower noise levels.

The two scroll compressors can deliver up to 65 °C to the heating system.
(Max. 58°C return temperature).

Soft starter relays and load monitor are factory installed.

Control with communication options:
– Check the status and change settings via SMS and with NIBE Mobile App
– Control the heat pump externally using, e.g. MODBUS.

Passive and active cooling options during summer months.

Prepared for pool heating, sub shunt, HWC.

Double compressors give better output control, longer operating intervals, less wear and greater reliability.

Up to 540 kW with nine F1345s in the same system.



Modular design
MAKES IT SIMPLE TO INSTALL ACCESSORIES
The heat pump and its accessories have been harmoniously designed to create a streamlined look, with all pipes tucked discreetly out of sight. Whether you decide on a heat pump with an integrated hot-water tank and an extra ventilation unit, or the combination of a heat pump and stand-alone hot water tank, the overall impression will be of one, neat system.

Energy-saving circulation pumps
CUTS ENERGY CONSUMPTION AND COSTS
The circulation pumps are controlled by the heat pump software which adjusts their speed to the energy requirements of the building and the outdoor temperature. Since only the required amount of energy is generated, this is an extremely economical way to meet energy needs.

Detachable compressor module
SIMPLIFIES TRANSPORT, INSTALLATION AND MAINTENANCE
The compressor module can be quickly and simply detached from the heat pump making it much easier to transport, handle and install. Should the compressor module need to be serviced, it can be detached and serviced without the heat pump.

Well-designed interior
LESS NEED TO USE THE MANUAL
Our heat pumps come with the user's manual practically inserted in a special pocket on the inside of the aluminium door. Installers will find the interior of the heat pump so neat and well-designed that they'll hardly ever need to open the manual.

USB port
FOR UPLOADING AND DOWNLOADING DATA
The USB port offers multiple advantages. End users can download operating data history to a USB memory stick and give it to their local NIBE specialist instead of having to arrange a visit to the premises.

External design
AN ATTRACTIVE DEVICE
The main unit of the heat pump is completely white, so it looks perfectly in place in a cellar or utility room. The NIBE F1345 also has an attractive brushed aluminium door with a window over the digital display screen.

Integrated circulation pumps
KEEPING THE HEAT PUMP QUIET
Our ground source heat pumps are now built with the circulation pumps inside the compressor module which makes them quieter than ever. As a result, they are almost silent in operation.



NIBE™ F1345

Ground source heat pump

One of a new generation of heat pumps, designed to supply your home with inexpensive and environmentally friendly heating. Connect to an optional low temperature heat distribution system such as radiators, convectors or underfloor heating. Add accessories, such as a hot water heater, passive cooling, ventilation recovery, pool and other heating systems.

With its two large scroll compressors, NIBE F1345 is the ideal ground source heat pump for multi-occupancy buildings, industrial premises, churches and other buildings with a large heat demand. The compressors collaborate and engage as necessary, giving better power control, less wear and greater operational ability.

The new F1345 is more flexible than ever and with its advanced control system it can be adapted to several system solutions. In systems with up to 9 heat pumps and with a wide range of accessories such as for control of oil, gas, pellet fired or electric boilers, you find the full flexibility for your installation.

NIBE F1345 is equipped with a multicolour display, multi languages support and simply upgradable software via the built in USB port.

NIBE F1345

Sizes	24, 30, 40, 60 kW
Integrated water heater	No
Delivery temperature	65°C
Soft starter included	Yes
Immersion heater	Accessory
Hight/Width/Depth	1800/600/620 mm



NIBE™ AMB 30

Air collector

NIBE AMB 30 is a heat absorbing air module that is an accessory for NIBE F1345. Using this accessory it is possible to increase the efficiency of an installation. It is ideal when ground/rock collectors cannot be dimensioned for the capacity that the installation requires.

AMB 30 is connected to F1345 only (outdoor air operation) or in combination with rock/ground collector (hybrid operation) in order to supply the heat pump with renewable energy.

AMB 30 is in principle a heat exchanger that exchanges the air's energy to a brine system using an axial fan and control system. The fan has two speeds that either changes automatically at the selected outdoor air temperature or is manually set to high/low speeds.
The control system manages all functions such as fan operation, defrosting, selection of operating mode, and stopping the compressor during defrosting and at low outdoor air temperatures.
The material has been chosen for a long service life and is designed to withstand demanding outdoor conditions.

NIBE AMB 30

Operating voltage	400V 50Hz 3NAC
Brine	Ethylene glycol
Air flow, low / high fan speed	5000/7000 m3 / h
Height / width / depth	1400 / 1205 / 520 mm
Minimum / maximum operating temperature	-7/50 ° C

* Outdoor air / Flow temperature

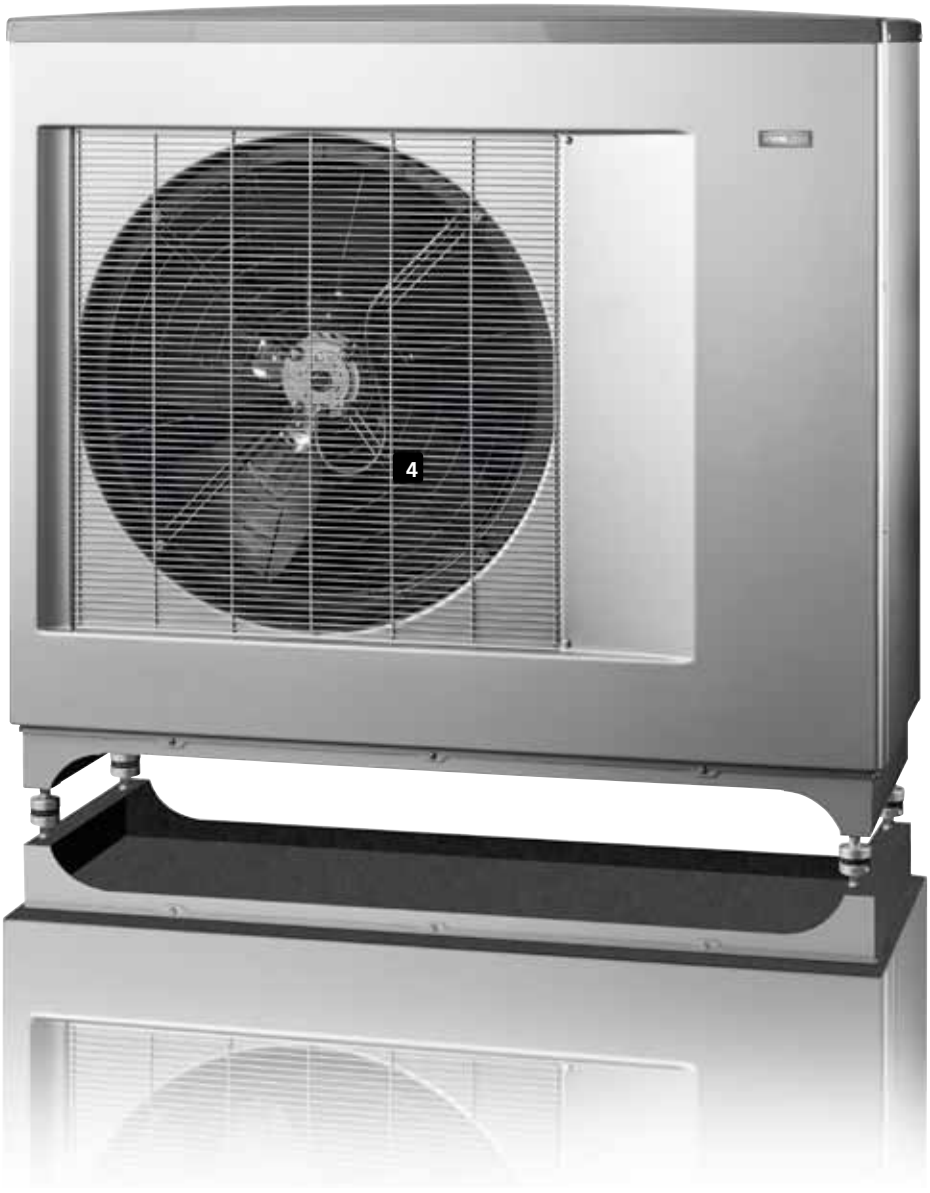
WHAT MAKES THE NIBE™ F2300 SUCH AN EFFICIENT AND VERSATILE HEAT PUMP?

1 Silent operation
Components are chosen to reduce sound levels, which means the large F2300-14/20 kW have the same sound output as the smaller F2026-8.

2 Monitoring and safety system
If a situation occurs that could cause damage to the machinery over time, the monitoring system will automatically stop the heat pump.

3 Good domestic hot water performance
The high supply temperature enables good domestic hot water performance.

4 Hard wearing materials
The materials used to build the NIBE F2300 heat pump are especially hard wearing, so your heat pump will give a long service life even in harsh outdoor conditions. For example, two layers of anti-corrosion treatment prevent the battery from rusting.



5 Discreet design
The neutral appearance of NIBE F2300 means that it will not attract undue attention when installed in your garden, but blends discreetly with the surroundings.

6 Robust condensation water soution
Condensation water from the defrost operation is gathered in a built-in tray. With the accesoory KVR 10 it can be transferred to a collection point at 1- 6m.

7 Stable winter operation
NIBE F2300 has been developed to cope with winter conditions.
NIBE F2300 produces high temperature heating, even when the temperature drops to –25°C.

8 Prepared for a range of system solutions
To complete your heating system, NIBE offers a number of ready-made combinations with indoor modules that are designed to work optimally together with the NIBE F2300.



NIBE™ F2300

Air/Water heat pump

NIBE F2300-14 and -20 are two new air/water outdoor units that are particularly suitable for larger houses/buildings. Great efforts have been made to create attractive system combinations. Improved efficiency, COP levels among the best on the market.

The NIBE F2300 is an intelligent heat pump that can work with virtually any heating system that your home already has, such as oil, gas or wood-fired boiler. NIBE SMO 10 (advanced external control module) creates a complete system together with the air/water heat pump NIBE F2300

The NIBE F2300 has been developed to make installation as smooth as possible.

– Efficient high temperature compressor that operates at temperatures down to – 25°C.

– Enlarged ambient working envelope down to -25°C and up to +40°C.

– Higher supply temperature. 65°C at -10°C ambient and 63°C at - 25°C.

– Robust condensate water solution. Prepared to connect accessory to lead away condensate water.

NIBE F2300

Effect (A7/W45)	14, 20 kW
Max temperature flow line	65°C
Working range outdoor temperature	-25 - +40°C
Operating voltage	400V 50Hz 3NAC
Weight	250/230 kg
Height/Width/Depth	1385/1455/620 mm



NIBE™ SMO 10

Control module

NIBE SMO 10 is an intelligent control module, which can be combined with one or more NIBE air/water heat pumps and existing heating and hot water equipment to build a complete installation.

Suitable for a variety of configurations, the basic equipment is a heat pump that can be docked to an electric boiler, oil boiler and storage tank / water heater such as a. NIBE VPA / VPB.

See www.nibe.eu for all possible configurations of NIBE SMO 10. NIBE SMO 10 can control up to nine air/water heat pumps (including max. one for hot water), immersion heater, circulator, shunt, etc.

– Easy to install

– Guaranties optimal control of one or several air/water heat pumps and existing heating system

– Controls the heating system using degree/minute calculation.

– Gives a clear view of the heat pump and heating system's essential temperatures.

NIBE SMO 10

Max number of heat pumps	9
Max number of sensors	14
Max number of circulation pumps (heating system)	2
Weight	7 kg
Height/Width/Depth	316/ 363/ 150 mm

ACCESSORIES

NIBE™ F1345	Accessories

NIBE™ AMB 30



Air collector

NIBE AMB 30 is a heat absorbing air module for NIBE F1330/F1345. Using this accessory it is possible to increase the efficiency of an installation and is ideal when ground/rock collectors cannot be dimensioned for the capacity that the installation requires.

NIBE™ VPB 500-1000



Large volume water heaters

VPB is a range of efficient water heaters with a wide range of applications, suitable for connection to heat pumps, gas or oil-fired boilers.

All models are intended for properties with large hot water requirements. They are also suitable for connection in parallel for use in larger properties

NIBE™ HPAC 42



Climate exchange module

The NIBE HPAC accessory gives your installation a high degree of flexibility. It is developed to enable the heat pump potential applications - both heating and cooling. Max 40 kW heat pump power.

NIBE™ FLM



Exhaust air module

Developed to work in conjunction with NIBE ground source heat pumps the FLM module recycles old, stale air from the house, extracts the energy from it and reuses it to heat new, clean air from outside.

NIBE™ ECS 40
NIBE™ ECS 41

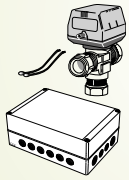


Extra heating circuit

ECS is used when heat pump is installed in houses with up to four different climate systems that require different flow line temperatures.

ECS 40 is used for floor heating < 80 m².
ECS 41 is used for floor heating > 80 m².

NIBE™ POOL 40



Pool heating

For pool heating using a heat pump. Max 17 kW heat pump power.

NIBE™ SMS 40



GSM remote control

With SMS 40 the heat pump can be controlled and monitored remotely via SMS messages in your mobile phone.

Now with NIBE Mobile App

NIBE™ MOBILE APP



Status control

Put full control of your NIBE Heat pump in your pocket. Turn on the heat on your way home or check the status of your indoor climate from anywhere in the world, the possibilites are endless.
For Android phones.

NIBE™ RMU 40



Control module

With RMU 40 you can control and monitor your NIBE F1345 from another room in the house.

NIBE™ MODBUS 40



Communication module

With MODBUS 40 a NIBE heat pump can be controlled and monitored by external Modbus equipped equipment.

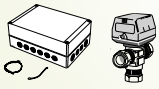
NIBE™ AXC 50



Accessory card

This accessory is e.g. used to enable connection and control of:
- Mixing valve controlled additional heat
- Pump for hot water circulation
- Ground water pump

NIBE™ SOLAR 42



Solar heating

NIBE SOLAR enables solar heating with your heat pump. With additional solar panels and VPAS or VPBS you get a complete system.

NIBE™ ELK 26
NIBE™ ELK 42



Electric boiler

Electric boilers for additional heating for ground source heat pumps.

NIBE™ UKV



Buffer vessels

Buffer vessels for heating systems.

NIBE™ F2300 | Accessories

NIBE™ SMO 10



Controle module

NIBE SMO 10 is an advanced control module that creates a complete unit together with the air/water heat pump and existing heating and hot water equipment. It can control up to nine NIBE F2300 units.

NIBE™ SMO 05



Controle module

With the basic control module SMO 05, it is possible to position the display unit in a suitable position for the end user. For example, in the hall or kitchen. The controller has full intelligence and is part of a new NIBE generation controller platform.

NIBE™ VVM 500



Indoor module

NIBE VVM 500 is part of a new generation of products for heating and domestic hot water. Heat production is reliable and economical with integrated hot water coil, circulation pumps, solar coil, control system and immersion heater.

NIBE™ VPB 500-1000



Large volume water heaters

VPB is a range of efficient water heaters with a wide range of applications, suitable for connection to heat pumps, gas or oil-fired boilers.

All models are intended for properties with large hot water requirements. They are also suitable for connection in parallel for use in larger properties

NIBE™ VPA
NIBE™ VPAS



Double-jacketed hot water cylinder

NIBE VPAS is an accumulator tank that is primarily designed for connection to heat pumps in combination with solar panels.

VPA 300/200

VPA 450/300

VPAS 300/450

NIBE™ ELK 15



Immersion heater

ELK 15 is an immersion heater primarily intended for installation together with heat pump for heating houses or smaller apartment blocks.

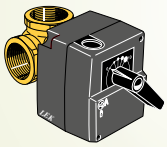
NIBE™ ELK 26
NIBE™ ELK 42



Electric boiler

Electric boilers for additional heating for air/water heat pumps.

NIBE™ VST 20



Hot water control

This accessory makes hot water priority possible at large heat pump outputs (charging power between 15 and 40 kW), e. g. F2023-14 (together with an SMO 10) and F1345-40. This also requires a hot water accumulator, for example, NIBE VPA.

NIBE™ HR 10



Auxiliary relay

Auxiliary relay HR 10 is a connection box housing a contactor and a rotary selector switch.

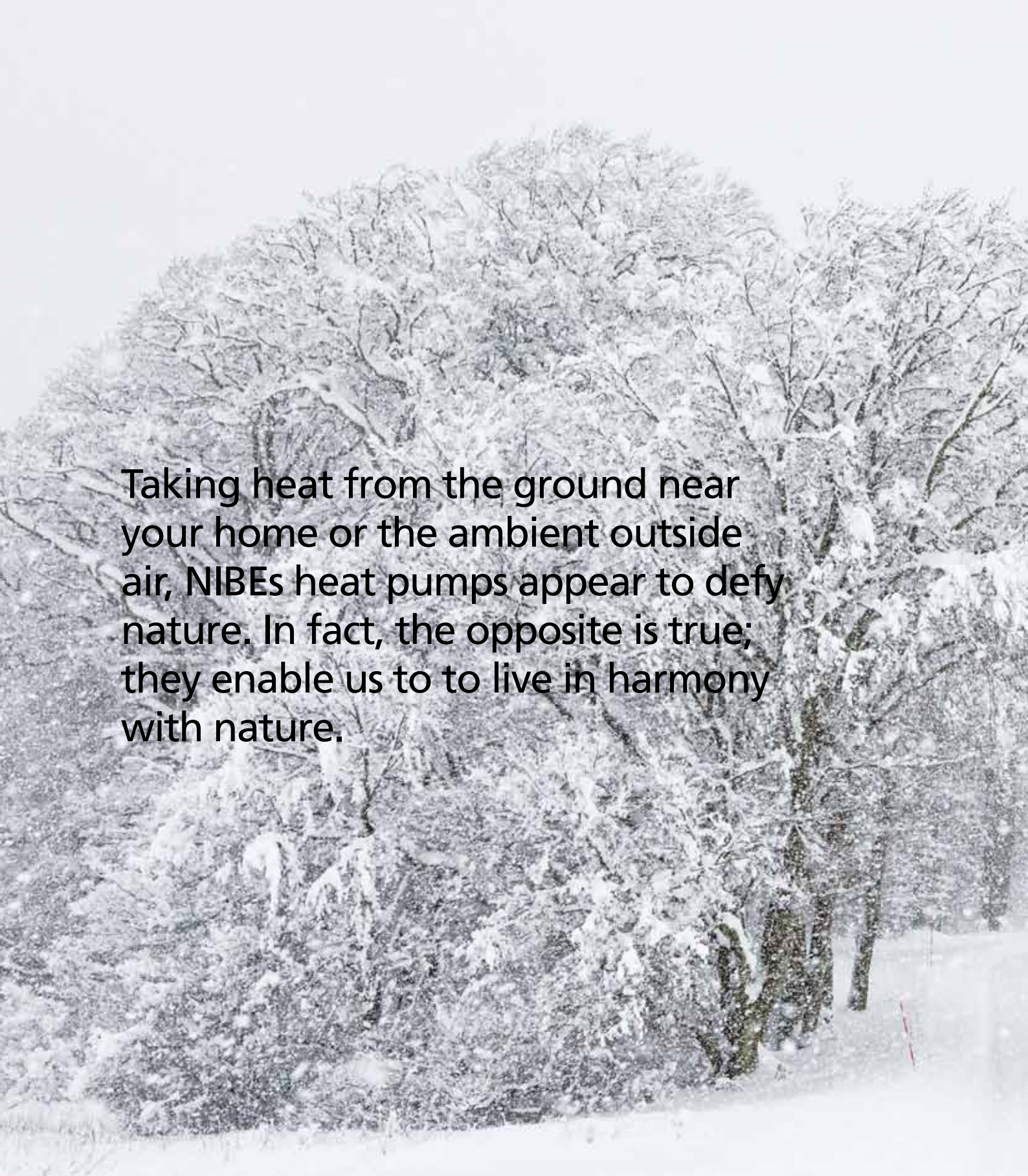
It is used to control external 1 to 3-phase loads such as oil burners, immersion heaters and pumps.

NIBE™ KVR 10



Condensation water tube

To lead away condensation water from outdoor unit.



Taking heat from the ground near your home or the ambient outside air, NIBEs heat pumps appear to defy nature. In fact, the opposite is true; they enable us to to live in harmony with nature.



NIBE OF SWEDEN

Living in harmony with nature

The Swedes have a long and impressive track record of clever, money-saving innovations that use resources sparingly. The simple reason for this is that Sweden was historically a poor agrarian country. A harsh winter climate made food scarce for many months, necessitating careful forward planning.

Today, Sweden is a technologically advanced country with a successful economy, so this is no longer necessary. However, the mindset continues to be manifested in the form of fabulous, cost-saving innovations.

NIBE is a perfect example of the economical Swedish mind at work! The company was founded by Nils Bernerup in 1952, after a particularly cold winter. And over the last 60 years it has become Sweden's leading supplier of domestic heating products, continually driving the development of ever-more efficient heating methods.

Early products included water heaters and pressure vessels. In the 1970s these were supplemented by electric boilers. Later, heat pumps and a wide range of other heating products that meet the needs of the European markets, were added to the mix.

Nowadays, NIBE is a leading player in heating solutions around Europe, which is partly due to the fact that our heat pumps are designed to cope with the very coldest Swedish nights.

THREE KINDS OF HEAT PUMPS FROM NIBE

Exhaust air heat pumps

Ideal for heating domestic premises and tap water. An exhaust air heat pump ventilates the building and recovers the energy in the warm air, reusing it to warm up your sanitary water or fuel a central heating system.

Ground source heat pumps

Drawing heat from surface soil, bedrock or the water in a nearby lake, this is a great option for heating houses, multiple-unit properties and other larger buildings. Available with or without an integrated water heater.

Air/water heat pumps

These pumps extract heat from the ambient outside air. In contrast to simpler types of air-to-air heat pumps, they are connected to the building's heating system and can produce both heat and hot water.

European Directive 20/20/20

The 20/20/20 European directive imposes compulsory targets on the EU's 27 member states, specifying that 20% of energy consumption must be met by renewable sources by 2020. Since air/water heat pumps are now classified as a renewable energy source, their installation will help member states reach this ambitious target. And in many cases, local or regional authorities are offering home owners subsidies to switch their existing heating systems to a renewable source such as a heat pump.

20/20/20

Exhaust air heat pumps



Ground source heat pumps

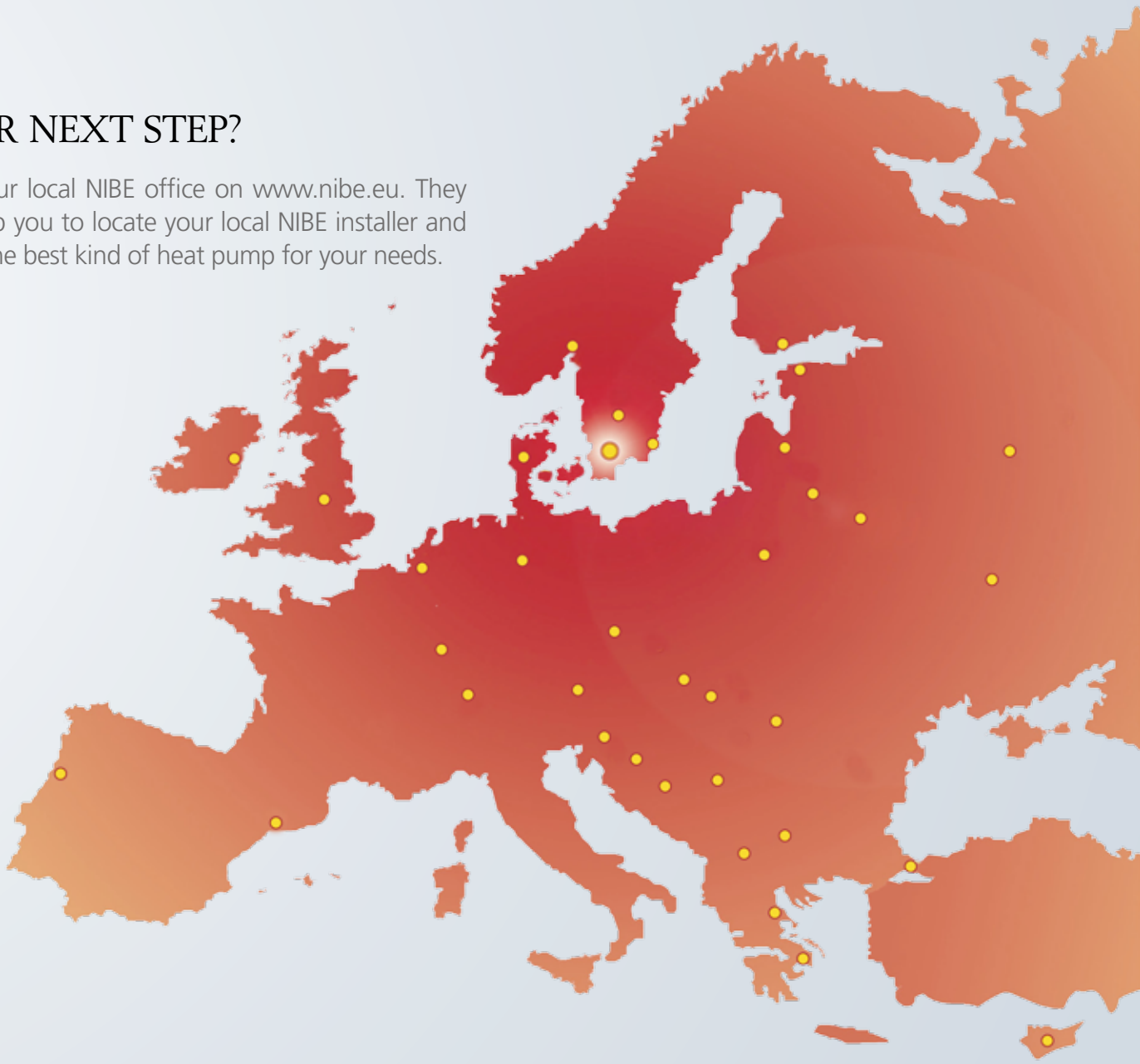


Air/water heat pumps



YOUR NEXT STEP?

Find your local NIBE office on www.nibe.eu. They will help you to locate your local NIBE installer and select the best kind of heat pump for your needs.



A new generation of heat pumps
DESIGNED FOR EARTH

What do we mean by "A new generation of heat pumps – designed for earth?"

Our products are designed to USE THE EARTH
The main energy sources for NIBE heating solutions are the earth, the sun, the ambient air or a water source near your home – one or more of which occur naturally all over the planet and are provided free by Mother Earth.

Our products are relevant ALL OVER THE EARTH
Since we now offer a system with both heating and cooling functions, you can use a NIBE heating system anywhere, regardless of your geographic location.

Our products are designed with the HEALTH OF THE EARTH in mind
NIBE products have a very low environmental impact compared to other heating systems currently available. They do have some impact, as do all manufactured goods, but we are continually working to minimise this and to deliver an environmental payback in the form of reduced emissions.



NIBE ENERGY SYSTEMS
Box 14
285 21 Markaryd
SWEDEN
Tel. +46 433 - 73 000
www.nibe.eu

639507 GKB GB Apartment buildings 1218-1

This brochure is a publication from NIBE. All product illustrations, facts and specifications are based on current information at the time of the publication's approval. NIBE makes reservations for any factual or printing errors in this brochure. ©NIBE 2012.
Printed by: Strokirk-Landströms AB Photos: www.benfoto.se.